

CLAIMS

1. An audio system, comprising an audio frequency actuator coupled to a body so as to cause the body to radiate sound when an audio signal is supplied to the actuator by a controller, and an acoustic sensor coupled to said body or to an adjacent body
5 so as to sense acoustic vibrations in said body, the sensor being connected to the controller, whereby the controller is arranged to change the audio signal supplied to the actuator according to the vibrations sensed by the sensor.
2. An audio system, comprising an audio frequency actuator coupled to a body so as to cause the body to radiate sound when an audio signal is supplied to the ac-
10 tuator by a controller, and an acoustic sensor coupled to said body or to an adjacent body so as to sense acoustic vibrations in said body, the sensor being connected to the controller, whereby the controller is arranged to detect predetermined characteristics of the sensed acoustic vibrations and to output an alerting signal in response thereto.
3. An audio system according to Claim 1 or 2, wherein the actuator and the
15 sensor are coupled to the same body.
4. An audio system according to Claim 3, wherein the sensor is incorporated into the actuator.
5. An audio system according to any preceding claim, wherein the actuator is a magnetostrictive actuator.
- 20 6. An audio system according to any preceding claim, wherein the sensor is a piezoelectric device.
7. An audio system according to any preceding claim, wherein the body is rigid or flexible panel.
8. An audio system according to Claim 7, wherein the panel is a ceiling panel,
25 a wall panel, a floor panel or a window pane of a building or vehicle.
9. An audio system according to any preceding claim, wherein the controller is arranged to detect acoustic signals with predetermined characteristics in the output from the sensor and to supply to the actuator an audio output signal selected according to said characteristics.

10. An audio system according to Claim 9, wherein the detected characteristics represent ambient noise and the output signal is a random sound signal such as white noise or pink noise adapted to provide a degree of masking of the ambient noise.

5 11. An audio system according to Claim 9, wherein the detected characteristics represent the quality of the audio signal supplied to the actuator and the controller is adapted to correct the supplied audio signal in accordance with the detected characteristics to improve the sound radiated in the space.

12. An audio system according to Claim 2, wherein the predetermined characteristics represent a damaging attack on said body.

10 13. An audio system according to Claim 2, wherein the predetermined characteristics represent the sounds generated by a person within the space.

14. An audio system according to Claim 2, 12 or 13, wherein the alerting signal causes output of an audible and/or visible alarm.

15 15. An audio system according to Claim 13, wherein the alerting signal is used to control the operation of lighting and/or heating within the space.

16. An audio system according to Claim 13, wherein the alerting signal is used to control the supply of audio signals to the actuator.

20 17. A noise control system comprising a microphone associated with a rigid surface, control means connected to the microphone to detect ambient sound and arranged to generate a control signal in anti-phase to the detected sound, and a transducer supplied with the control signal, the transducer being attached to the surface so as to cause the surface to radiate sound waves which reduce the amplitude of the ambient sound in a region adjacent to the microphone.

25 18. A noise control system according to Claim 17, wherein the transducer comprises a giant magnetostrictive material (GMM) element whose change in strain under the influence of an audio frequency magnetic field induces sound waves into the surface.

19. A noise control system according to Claim 17 or 18, comprising means for filtering from the control signal speech adjacent to the microphone.

30 20. A table having installed therein or thereon a noise control system according to any of Claims 17, 18 or 19.

- 23 -

21. A bar or counter having installed therein or thereon a noise control system according to any of Claims 17, 18 or 19.

22. An audio system, comprising an audio frequency actuator coupled to a body which is not a flat panel so as to cause the body to radiate sound when an audio signal is supplied to the actuator by a controller.

23. An audio system according to Claim 22, wherein the body is a tubular body.

24. An audio system according to Claim 23, wherein the tubular body is an item of street furniture or a support therefor.

25. An audio system according to Claim 24, wherein the tubular body is a supporting post for a sign.

26. An audio system according to any of Claims 23 to 25, wherein the tubular body is non-circular in section.

27. An audio system according to any of Claims 23 to 26, wherein the audio frequency actuator is mounted within the tubular body.

28. An audio system according to any of Claims 22 to 27, wherein the audio frequency actuator is a transducer comprising a giant magnetostrictive material (GMM) element whose change in strain under the influence of an audio frequency magnetic field induces sound waves into the surface.